



NSRS Modernization Update NADCON 5 FRN vote

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NOAA's National Geodetic Survey

NSRS Modernization Update

Modernizing the NSRS

The “blueprint” documents: Your best source for information



NOAA Technical Report NOS NGS 62

Blueprint for 2022, Part 1: Geometric Coordinates

September 18, 2017

National Oceanic and Atmospheric Administration • National Geodetic Survey

Geometric:
Latest: Sep 2017

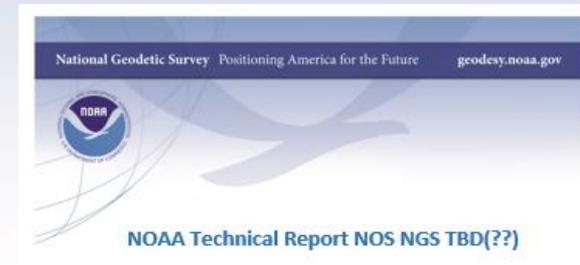


NOAA Technical Report NOS NGS TBD(64)

Blueprint for 2022, Part 2: Geopotential Coordinates

National Oceanic and Atmospheric Administration • National Geodetic Survey

Geopotential:
Nov 2017



NOAA Technical Report NOS NGS TBD(??)

Blueprint for 2022, Part 3: Re-inventing Bluebooking

National Oceanic and Atmospheric Administration • National Geodetic Survey

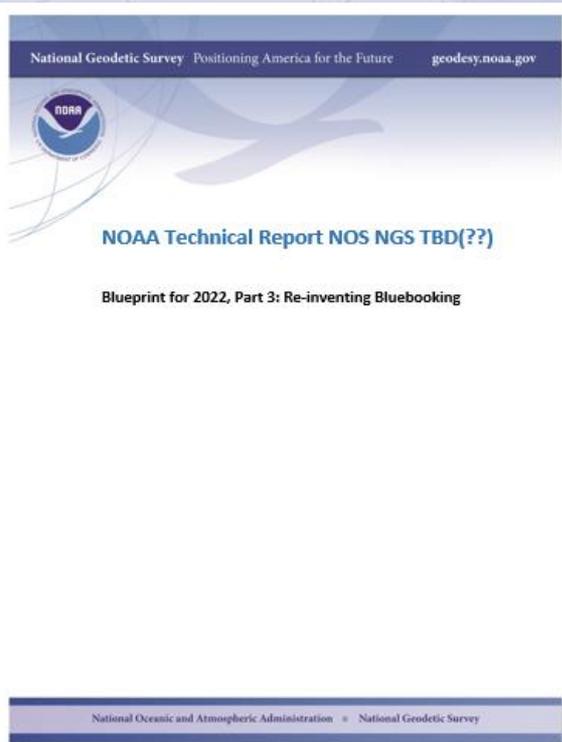
“Using the NSRS”:
September 2018

February 22, 2018

FGCS Meeting

Modernizing the NSRS

- Writing team has been working for the last month
- Foundational component of this document will be “case studies”
 - Addressing real-world examples of NSRS users
 - “I’m in charge of (making topo maps ; monitoring levee subsidence ; surveying airports ; etc....)”
 - How things worked in NAD 83/NAVD 88
 - How they will have to change in the future
- Direct contributions by FGCS members would be of immense value
 - Please contact Dru with a desire to participate as a contributor: dru.smith@noaa.gov



“Using the NSRS”:
September 2018

2022 Project Updates

- State Plane: Lots! See Michael Dennis's Presentation
- OPUS-Projects:
 - On Beta: You can now “bluebook” surveys using OPUS-Projects!
 - In Development: OP expansion to include RTN/K data
 - In Planning: OP expansion to include leveling data

2022 Project Updates

- xGEOID models:
 - Look for these expansions in 2018:
 - *Three* regions (added Guam/CNMI and American Samoa)
 - Deflections of the Vertical
 - Entered into an annual cyclic agreement with NGA for ingestion of GRAV-D data into a global geopotential model to serve as foundation to xGEOID models through 2022
- MATRF2022:
 - NGS 2017 survey yielded the world's first absolute plate rotation model for the Mariana plate based on in-situ data (JGR, submitted)

2022 Project Updates

- NSRS Database
 - Passive control GPS data being organized for massive re-processing into the IGS08 and IGS14 frames
 - 50k to 100k occupations since 1997(4?)
 - CORS data into the NSRS DB
 - True history of CORS captured...

CORS position/velocity

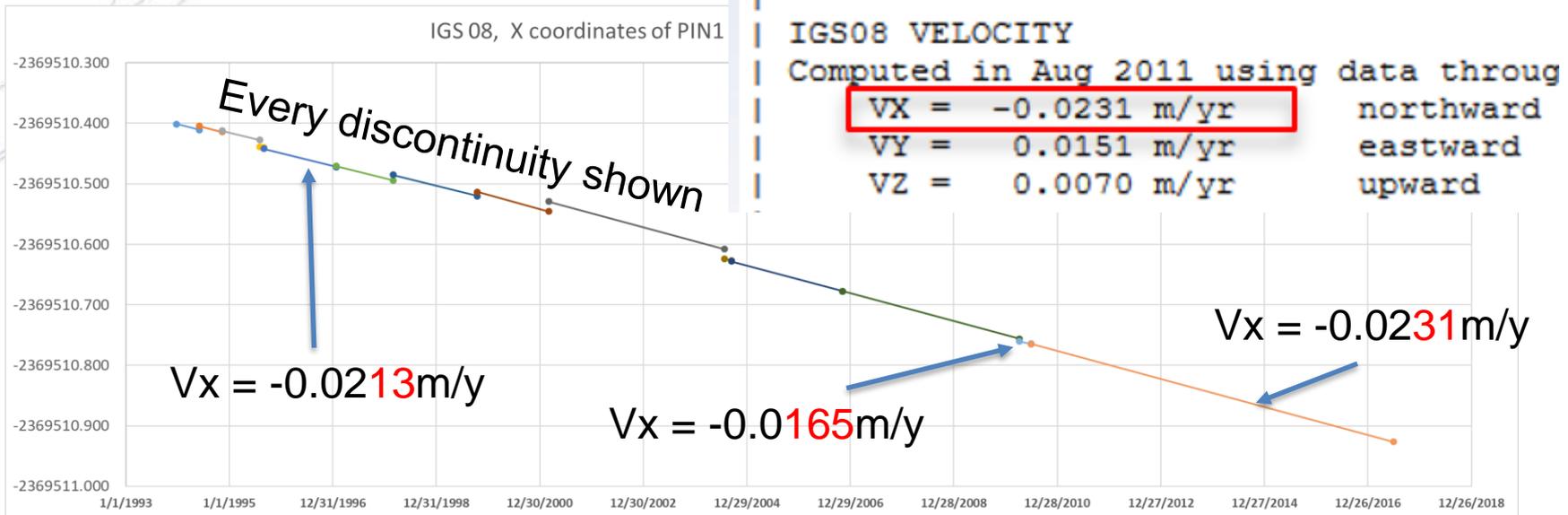
- Today:
One coordinate, at one epoch, and one velocity...

```

Antenna Reference Point (ARP): PINON 1 PGGA CORS ARP
-----
PID = AFS708

IGS08 POSITION (EPOCH 2005.0)
Computed in Aug 2011 using data through gpwsk 1631.
X = -2369511.285 m latitude = 33 36 43.76186 N
Y = -4761208.286 m longitude = 116 27 29.37473 W
    
```

- 2022:



2022 Project Updates

- Comprehensive Toolkit Improvements
 - Decision: **VDatum** and **NCAT** coexistence. Target:
 - Will draw from identical master library for common code, such as NADCON
 - Identical I/O support (file formats)
 - Identical functional support (downloadable, browser, web services)
 - VDatum will have a broader set of tools (“tidal datums”, etc)

2022 Project Updates

- Comprehensive Toolkit Improvements
 - NADCON 5 is live in NCAT and soon in VDatum
 - VERTCON 3 underway
 - Rebuild/Reconfirm CONUS 29/88 grid
 - Build grid for Alaska (29/88)
 - Investigating grids for islands. Local Tidal to:
 - PRVD02, ASVD02, NMVD03, GUV04, VIVD09
 - Prepare software for transformation to NAPGD2022



Thank you

NADCON 5 Agreement

FGCS and FRNs

- Reminder from the October 2017 meeting:
 - In 1990, then-FGCC issued FRN setting “NADCON” as the standard method of mathematically transforming from NAD 27 to NAD 83
 - Never updated for new versions of NADCON
 - Never updated for other datums
 - Never updated for other realizations
 - Never updated for GEOCON

FGCS and FRNs

- I am proposing that the FGCS issue an FRN standardizing NADCON as the chosen method to transform between specific datums
 - With generic language to cover new versions:
 - *All new versions of NADCON, once approved by the FGCS, will supersede their predecessors, and will become the FGCS approved standard method of performing mathematical transformations between horizontal datums/reference frames within the NSRS.*